

INDEX

1. INTRODUCTION	1
2. METHODS	1
3. OVERVIEW ON THE AREA	2
4. RECOMMENDATIONS	3
4.1 SPECIFIC RECOMMENDATIONS	3
4.1.1 Location of the MPA	3
4.1.2 Zonation within the site	4
4.1.3 Sea Turtle Conservation	5
4.1.4 Protection of bioformations: Platforms with <i>Dendropoma petraeum</i> and facies with <i>Titanoderma byssoides</i>	6
4.1.5 Tourism (three summer months)	7
4.1.6 Commercial fishing	8
4.1.7 Recreational fishing	8
4.1.8 Discharge from Ras El Bassit and pollution from plastic bags	9
4.1.9 The outputs of liquid sewage in El Bassit	9
4.1.10 Need for research and collection of information	9
4.2 GENERAL RECOMMENDATIONS	11

DETAILED RECOMMENDATIONS FOR THE MANAGEMENT OF THE MARINE AREAS OF OUM TOUYOUR AND RAS EL BASSIT

1. INTRODUCTION

Marine protected areas (MPAs) have the objective of safeguarding: representative types of coastal and marine ecosystems; habitats which are in danger of disappearing; habitats critical to the survival, reproduction and recovery of endangered, threatened or endemic species; and sites of particular importance for their scientific, aesthetic, cultural or educational interest¹. For an MPA to be truly successful, it needs to be legally protected and physically delimited (i.e. using buoys), and to have a management plan, infrastructures and trained staff.

The Syrian authority declared the zone of Oum Touyour an MPA. During the last two years (2002 – 2003), RAC/SPA in collaboration with Syrian Authority, carried out two preliminary field surveys in the areas from Lattakia to the Turkish border². Within this framework and starting from these preliminary results, for and in cooperation with RAC/SPA, the mapping of the areas between Oum Touyour and Ras El Bassit was carried out by Nautilus with the collaboration of the Syrian Authority and experts from the Institute of Marine Biology of Lattakia during summer 2003³.

All the information collected during this survey was used (i) to prepare a GIS, a widely accepted tool in MPA management and (ii) to develop the present recommendations.

2. METHODS

In the development of the present recommendations, when and where possible, the precautionary principle and ecosystem approach were applied. Principally, the information used consisted of data collected in the areas of Ras el Bassit and Oum Touyour in the earlier stages of this project in the summer of 2003³, and past experiences and methods used in the management of other MPAs in the Mediterranean. The SPA Protocol (including its annexes), the Standard Data Entry Form for National Inventories of Natural sites of conservation interest and the Mediterranean Action Plan for the conservation of marine vegetation and this for the conservation of Marine Turtles were particularly taken into account.

¹ From the Protocol concerning specially protected areas and biological diversity in the Mediterranean. RAC/SPA, Tunis

² - First assignment concerning the development of Marine Protected Areas on the Syrian coast (8-15 November 2002)" by M. Foulquie and R. Depuy De La Grandrive, for RAC/SPA within Med MPA Project;

- Monk seal presence and habitat assessment - Results of a preliminary mission carried out in Syria. G. Mo and M. Gazo for RAC/SPA within Med MPA Project;

³ Technical report of the survey and mapping (GIS) of marine biotopes in Syria – Made by Nautilus s.c.a.r.l. for RAC/SPA within MedMPA Project.

3. OVERVIEW ON THE AREA ⁴

The study site extends from Ras El Bassit to the MPA of Oum Touyour; from the upper-littoral to 40 m depth.

The entire study area represents an elevated level of naturalness, a steep and articulated sea bottom in the northern section (Ras El Bassit) and more monotonous in the south (Oum Touyour).

Following qualitative and administrative criteria, the site was divided into four subunits:

- Unit 1. Ras El Bassit, calcareous with rocks throughout the infralittoral;
- Unit 2. The northern section of the *in between* area, non calcareous with rocks in most of the infralittoral;
- Unit 3. The southern section of the *in between* area, non calcareous with no rocks in the infralittoral; and
- Unit 4. Oum Touyour, protected by MPA status.



Unit 1 surrounds the cape of Ras El Bassit and has the highest level of species and habitat diversity. Unit 2 is characterized by a rocky coastline with small intermittent beaches. It can be differentiated from Unit 3 due to the presence of a rocky sea bottom in the infralittoral zone. Unit 3, like Unit 4, consists of a sandy bottom in the infralittoral. It can be differentiated from Unit 4 by its higher level of naturalness and by its legal status, although not implemented as of yet, as an MPA.

Throughout the site there are several threatened species present, including the sea turtles *Caretta caretta* and *Chelonia mydas*, which are significantly abundant

⁴ For further information see “Technical report of the survey and mapping (GIS) of marine biotopes in Syria” – Made by Nautilus s.c.a.r.l. for RAC/SPA within MedMPA Project.

in particular in the area surrounding Ras El Bassit (Unit 1), and the grouper *Ephinephelus marginatus*.

Many habitats are present in the site that can be considered to be worthy of more attention than others due to their particular sensitivity or importance for the reproduction of protected species. Those most in need of protection include: emerged beaches used as nesting sites for marine turtles; platforms with *Dendropoma petraeum*; facies with *Titanoderma bissoides*, beach rock with *Dendropoma* reef and calcareous algae (*Titanoderma bissoides*); facies with *Zostera noltii* and *Halophila stipulacela*; and supralitoral and infralitoral caves.

Other than that generally needed when an MPA is instituted (i.g. delimitation of the area, public education regarding the area, creation of a management plan, creation of a management body, availability of marine vessels, involvement of local peoples, etc.), a series of other specific problems and needs were identified as threatening to the marine environments of Ras El Bassit and Oum Touyour:

- The presence of a waste disposal to the north of Ras El Bassit
- Ghost nets present throughout the site;
- The growing use of jet skis, in particular from the tourist beach of El Bassit;
- The negatively impact on bioformations caused by boats used for tourist transport;
- Several untreated sewage inputs from the El Bassit beach; and
- Spearfishing of juvenile groupers and other fish.

4. RECOMMENDATIONS

The recommendations that follow have been divided into the following two sections:

- A set of specific recommendations elaborated taking into account the status of sensitive species and habitats present in the area, the observed problems, the landscape characteristics, and the present shortages of information and data.
- A general recommendation regarding the principle actions and initiatives necessary for the functioning of the MPA.

4.1 SPECIFIC RECOMMENDATIONS

4.1.1 Location of the MPA

Present situation and motivation

The Oum Touyour zone has already been declared MPA by the Syrian authorities.

The area around Ras el Bassit, approximately 12 km from Oum Touyour, is characterized by an elevated species and community diversity, a high level of naturalness, and the presence of numerous species and habitats considered to be threatened or in danger.

A geographic continuity exists between Oum Touyour and Ras El Bassit. Moreover, the area between these two zones is characterized by a highly valued landscape and environment, an elevated level of naturalness and a by the presence of sensitive species and habitats.

Reccomandation

1. Widen the present borders of the Oum Toyour MPA to the bay to the south of El Bassit's port. This would create a **unique MPA** that would include Oum Touyour, Ras El Bassit and the zone between the two localities.
2. Regarding the individual habitats and their distribution, we suggest to extend the protected area from the coastal zone (the beaches and rocky coasts for at least 30 m from the water's edge landward) out to the bathymetric depth of 40 m.

4.1.2 Zonation within the site

Present situation and motivation

In general, every MPA is divisible into three zones: the *core*, comprising the most important area to be conserved, a *buffer zone*, which surrounds this core zone and protects the area from excessive external pressures, and a final zone commonly termed *partial reserve*, which surrounds the buffer zone:

Zone A (core): These zones are designed to have the highest conservation value, they are very sensitive to anthropogenic disturbances and cannot tolerate any form of human use. In these areas, generally only scientific personal are given access permits in order to undergo authorized research.

Zone B (buffer zone): This zone neighbors the core and contains places with high conservation value which are tightly connected to those protected in the core area. This zone can tolerate diverse human uses, from research to a few forms of recreational activities and commercial fishing, only if they are controlled. Activities generally permitted include swimming and underwater activities that are compatible with the management of the natural characteristics of the area.

Zone C (partial reserve): this zone surrounds the core and buffer zone and is established in order to carry out a control of external activities that could negatively affect the other more protected zones. In general, the following activities are allowed: boating, navigation, access to motorboats with reduced speeds, commercial fishing and recreational fishing, all regulated.

Recently, ICRAM proposed that for some sites, an additional zone could be designed as part of any core area. In this central area, any form of resource extraction would be forbidden, with the exception of limited public access in a regulated and controlled way (*entry - no take*). This would make it possible to permit any visitor to the MPA to grasp one of the most important reasons for having marine parks, the reserve effect.

This classic model of zonation should be obviously adapted and modified in order to fit real situations.

As mentioned previously, the site of Oum Touyour and Ras El Bassit was divided into four functional units:

1. Ras El Bassit,
2. The northern section of the *in between* area,
3. The southern section of the *in between* area,

4. Oum Touyour (see above for an overview on the area for further details).

In general, the observations collected during the present study suggest that particular attention be given to sea bottom and the coast line (circalittoral, infralittoral and sopralittoral plains) of units 1 and 2. Considering the principally sandy nature of the seabed in Units 3 and 4, the most attention should be given to the upperlittoral plain both due to its habitats (nesting areas of marine turtle) and its aesthetic character.

Recommendation

3. Based on the observations of the present study, the local conditions do not seem to warrant an obligatory creation of a **core zone A** within the area. Should the authorities retain that it is an opportune time to realize such protection, it is recommended that such a zone be placed in the area indicated as Unit 1. In any case it is advisable to verify through a specific study, principally on fishing sector, the potential socio-economic impact of this protection measure.
4. It is advisable that Units 3 and 4 be partially protected by designating them as **zone C**. In these areas, for the majority of the year, small-scale artisanal fishery could be allowed to exploit the areas, in addition to tourist access (with the exception of limitations on the use of jet skis, see recommendation 7.1). Limitations and controls on fishing should in particular address the reproduction period of sea turtles. Additional limitations in this area should include the mid and upperlittoral areas in particular with reference to turtle nesting areas (see recommendation 6), the protection of bioformations (see recommendations 11 and 12) and the grottos in the area around Oum Touyour.
5. It is recommended that management be more controlled and limited, in particular in relation to fishing in Units 1 and 2, which could be denominated as **zone B** of the MPA. As in Units 3 and 4, Units 1 and 2 should have the same restrictions relative to turtle nesting areas (recommendation 7) and bioformations (recommendations 11 and 12).

4.1.3 Sea Turtle Conservation

Present situation and motivation

In the study area between Oum Touyour and Ras El Bassit five beaches were identified as sea turtle nesting sites (*map and coordinates from the GIS*). The species *Caretta caretta* and *Chelonia mydas* were found to be present in high densities and frequencies throughout the area. The delicateness of the reproductive phase of these species and the possibility negative impact of anthropogenic activities, such as jet ski use, call for precautions.

Recommendation

6. **Protection of nesting areas** in the reproductive period of the sea turtles *C. caretta* and *C. mydas*
 - 6.1 Implement, in each of the five beaches, information panels with drawings and descriptions, that invite the local residents to respect the nesting sites of the turtles and that explain the importance and vulnerability of these species.

- 6.2 During the peak period of deposition (presumably between May and June) it is advised to prohibit all access to the beaches (excepting for scientific goals).
- 6.3 Other than the two precautionary measures just mentioned, research should be conducted to quantify the extent of reproductive events, identifying with exactness when the peak deposition period is and potential problems and threats.
- 6.4 Monitor the period when the eggs begin to open for the impact that local fishing has on the juvenile turtles. Eventually limit or prohibit fishing nets in the marine areas nearest the nesting sites in the most critical period for the juvenile turtles.

7. **Management of the presence of *C. caretta* and *C. mydas***

- 7.1 Prohibit the use of jet skis throughout the MPA
- 7.2 Undertake initiatives to educate the local population and fishermen by emphasizing the uniqueness of the area and how sensitive the local area is for these species.

4.1.4 Protection of bioformations: Platforms with *Dendropoma petraeum* and facies with *Titanoderma byssoides*

Present situation and motivation

The study area contains some important bioformations in the midlittoral plain, consisting of platforms with *Dendropoma petraeum* and facies with *Titanoderma byssoides*. Their rarity, fragility and species richness suggests that they should be protected in some form. These structures, although adapted to resist strong currents and many waves, are extremely sensitive to all mechanical actions, in particular boat docking and wakes and to trampling. The cartography carried out during summer 2003 has shown that there are three areas of principle interest regarding these bioformations (*map and coordinates from the GIS*); however, there may be also many other areas of bioformations that could be identified and protected.

Recommendation

- 8. **Map**, with great detail, all the areas within the mid and infralittoral zones that contain formations of *Dendropoma petraeum* and *Titanoderma byssoides*.
- 9. Look for non-destructive techniques to **study** the fauna and flora associated with the formations (e.g. photography).
- 10. Diffuse **information** about these structures and their importance and uniqueness to the fishing community, tourists and the resident population.
- 11. Place **visible signage** without impacting the structures in order to avoid impacts caused by boats and trampling. This could be done in each of

the three areas already identified (*coordinates from the GIS*) as well as other areas of interest that include bioformations.

12. In particular, regarding the beach rock to the south of Ras El Bassit, it would be useful to prohibit boat landing.
13. Undertake a **monitoring project** of all bioformations sites.

4.1.5 Tourism (three summer months)

Present situation and motivation

The entire area, but in particular near the beaches of El Bassit and Oum Touyour, is visited in the summer months by a large number of tourists. The tourists, almost exclusively, spend their time on the beaches. Both at Oum Touyour and Ras El Bassit, it is foreseeable that the number of tourists will increase in the future due to the MPA. As a consequence, it is thought that there will also be an increase in services available to tourists. In MPAs, an increase in tourism has brought economic benefits, but also potential problems for the equilibrium of the ecosystem. It is important that tourists understand the environment that they are in and its fragility. It will also be necessary that tourists know that the resources that they are using are not inexhaustible.

Recommendation

14. It is important that the local community is informed about the MPA, its intrinsic value and the possibility to use it to attract tourism. First of all, the residents, through a public education campaign, need to be informed and given the possibility to increase their knowledge about the environment and protection of the MPA. The most important points for an **education campaign** are:
 - 14.1 respect for the marine habitats, with particular reference to damaging activities, such as anchoring, fishing, trampling, boat trips along the coast, jet skis, and diving;
 - 14.2 respect for the local species, with particular reference to indiscriminate extraction, illegal fishing and fishing for juveniles;
 - 14.3 water quality, with particular reference to dumping solid waste at sea or of untreated sewage water.
15. Train local people to become **nature guides** in the MPA and, at the same time, guardians of the MPA.
16. Once the local community has been educated, the same should be done with any tourists or outsiders that visit the area. It would be ideal to create an **Information Center** for tourists that is capable to explain what is important in the MPA and what are the activities allowed and not allowed in the MPA and why.
17. In addition to an Information Center, pamphlets, brochures and information **booklets** explaining the habitats and species located in the MPA would be very important. These could be distributed throughout the area in all of the major tourist attractions.

4.1.6 Commercial fishing

Present situation and motivation

No specific information was available regarding the extent of fishing in the study area. That available indicated that the majority of the fishers in the area work on a small scale out of the ports of El Bassit or Oum Touyour. Some vessels working in the area are from Lattakia.

In the seabed of the site a relatively high number of ghost nets are present.

Recommendation

18. It is necessary to understand the quantity, typology and strength of the fishing sector in the area in order to properly regulate it at any point in the future. To this end, it is recommended that a **study** be completed *ad hoc*.
19. If possible, should be better to remove **ghost nets** from the MPA site. Considering the absence of recreational or professional diving in the area, the most practical method for accomplishing this would be the involvement of the military. They have the capacity and equipment necessary and could conduct this activity as a training activity.

4.1.7 Recreational fishing

Present situation and motivation

In all the site, in close proximity to rocky areas, the number of juvenile fish is high. Brown groupers juvenile are particularly numerous in the area. Spear fishing seems, instead, very popular and in restaurants it is very easy to find grouper juveniles for sale with very evident harpoon wounds. Given the sensitivity of groupers, and their protection status, it is very important to regulate their collecting.

Recommendation

20. **Regulate** spear fishing, calling for minimum size limits for the most sensitive species, the maximum quantity of fish that can be taken and fishing seasons.
21. **Educate** residents and in particular fishermen on the importance of brown groupers and about the fact that it will be difficult for the grouper population to recuperate once the density reaches the collapse level.
22. Explain the importance of the species for tourists, so that a **snorkelling tourism** can grow and develop in the next few years.

4.1.8 Discharge from Ras El Bassit and pollution from plastic bags

Present situation and motivation

Near Ras El Bassit there is a discharge point for solid urban waste. Although it is hidden from the coastline, due to its close proximity to the water, the discharge

allows for a continuous influx of plastic bags into the area. Plastic has a long lifespan in the water and poses a real danger for marine vertebrates (sea turtles more than anything else) that often, intentionally or accidentally; ingest a large quantity of them until some point where the plastic causes them to suffocate.

Reccomandation

This problem could be resolved in a variety of different ways:

23. (i) The ideal solution would be to initiate a **collection program** different from the solid waste in the area and provide containers specific to different types of waste (paper, plastic, iron, organic material, etc.). (ii) An alternative would be to change the mode in which waste is collected i.e. laying the **waste underground**, so that the dispersal of plastic by wind is avoided. (iii) Finally, the waste collection site could be **moved** to an area further away from the coast.
24. Parallely, it would be oportune to initiate an **education campaign** for the local residents, tourists and fishermen in order to stop them from throwing waste into the sea, in particular plastic bags. The organization of a campaign to collect floating plastic with groups of volunteers or associations could have a symbolic impact on the value of education.

4.1.9 The outputs of liquid sewage in El Bassit

Present situation and motivation

Along the littoral zone of El Bassit, in particular the southern zone near to the port, there are some outputs of liquid waste, most likely raw sewage. Considering the closeness of the outputs to Unit 1 of the site, characterized by a number of sensitive species, and the issue of sanitary hygiene (the zone is frequented by a number of swimmers during the summer months), some precautions should be taken.

Recommendation

25. Verify the typology and the origin of waste outputs in the littoral zone of El Bassit and intervene by means of the **creation of a cesspit**.

4.1.10 Need for research and collection of information

First of all, in general in MPA, research should be in part done to provide useful information for the management of the area. Some issues for further studies and investigations have been already identified:

- Detailed mapping, study of the associated fauna and flora, and monitoring of the bioformations of *Titanoderma bissoides* and *Dendropoma petraeum* (see recommendations 8, 9, 13);
- Census and monitoring of nesting sites for the sea turtle species *Caretta caretta* and *Chelonia mydas* (see recommendations 6.3, 6.4).

- Census of alien species and evaluation of the environmental impact of two of the most diffused invasive species in the area; the mollusc *Strombus persicus* and the algae *Styopodium shimperi*.
- Evaluation of the role of the area as a nursery area for grouper juveniles (*Ephinephelus marginatus*).
- Characterization of the pre-coraligenous population characterized by sponges and *Caulerpa racemosa*. This assemblage is present on the sea floor in Units 1 and 2 at more than 20 m depth.
- The systematic characterization of *Caulerpa* genus, with reference of the particular morphology of some specimen of *Caulerpa* observed to at more than 40 m depth;
- Finally, a socio-economic study of the human activities present throughout the area should be completed in order to provide many of the fundamental elements to the creation of a management plan, in particular, the following information could be especially useful:

Fishing activity:

- the number of boat which fish in the area (from Oum Toyur to El Bassit);
- harbours (or villages) of the boats which fish in the area;
- type of fishing activity (loglines, trammel, etc.);
- % of fishermen and the total number of population of El Bassit and Oum Toyur;
- main fishing areas within the area;
- interaction with flag species: turtles, dolphins, etc.;
- regulation of the fishery: forbidden activities, licence, etc.;
- quantification of the extent of spear fishing; and
- extent of associations, cooperatives of fishermen.

Tourism

- main tourist periods;
- tourist zones (hotel, rooms, etc) in the area/ tourist capacity (number of beds);
- areas under tourist pressure within the area;
- extent of jet ski use;
- number of tourist boat;
- number of tourists each year, for each site (El Bassit, Oum Touyour); and
- quantification of the extent of recreational fishing.

Housing

- regulation of the building in the area.

General

- network of road in the area;
- resident population of El Bassit and Oum Touyour;
- working activities of population in %;
- waste solid and liquid disposal in the area;
- characteristics of the waste disposal of Ras El Bassit; and
- industrial activities in the area.

4.2 GENERAL RECOMMENDATIONS

In addition to what has already been proposed in the previous chapter (detailed recommendations), five additional recommendations are made here regarding the general functioning of a MPA:

1. It is important to place **signs**, in the water (buoys) and on the coast to delimit the physical boundary of the MPA in order to be able to better control the area and to make everyone aware of the existence of the protected area.
2. The area should be managed by a **management body** with specialized personnel and an office in either the village of Oum Touyour or El Bassit
3. Considering the availability of vessels and the operativeness, **the control** of the area could be entrusted to the local military authorities.
4. There is a need to develop a **management plan** for the MPA, starting from the recommendations offered in the present document. Considering the existence of a terrestrial protected area in Oum Touyour, it would be desirable to integrate the marine protected area system with the terrestrial component, sharing both borders and programs.
5. In all the activities connected to the MPA (research, monitoring, enforcement, education, management) it is important to try to involve the **local population** as much as possible (fishermen, tourism operators, boat operators, etc). It is important to show to the local population both the natural value and the economic value of the MPA (see specific recommendations 14, 15, 16, 17).
6. In order to work well a MPA needs, in addition to an office (general recommendations n.2) **some basic tools** like: computers (at least one working with GIS) and other tools for the management of an office; at least one boat to allow the personnel of the management body to make the basic monitoring of the protected area and to intervene, when and if necessary; an hand-handled GPS; diving tools.